

# Texas Well Owner Network

## *PRIVATE WELL MANAGEMENT TO PROTECT HUMAN HEALTH AND AQUIFER INTEGRITY*

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Texas A&M AgriLife Extension Service

*Watershed Coordination Steering Committee*  
December 13, 2012





# *Private Wells: Drinking, Irrigation, Livestock*

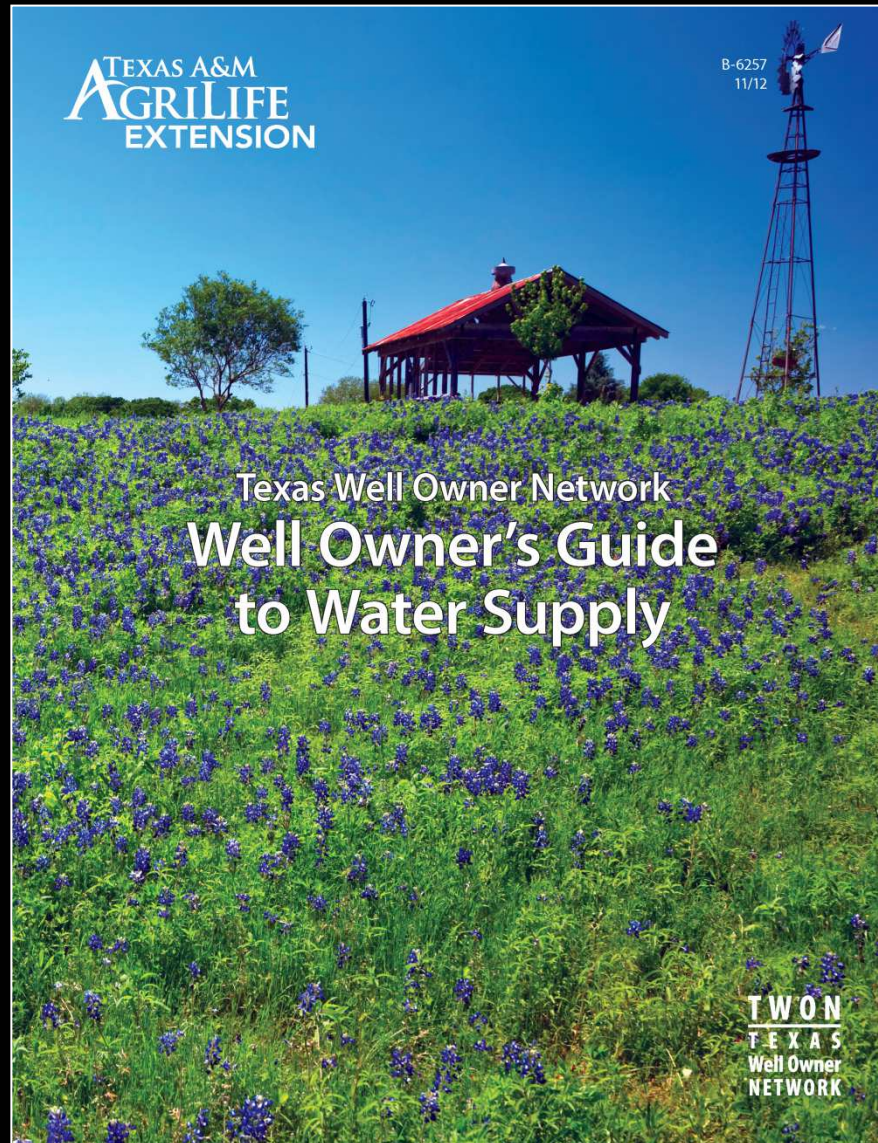
1. Over 1,000,000 private water wells in Texas.
2. About 8% of the total population and 20% of the population living outside of city limits drink well water
3. **Twenty to 30% of private wells contain fecal coliform bacteria. MCL = 0.**
4. Two to 50% exceed nitrate MCL depending on region (TWDB 2003-2008 data for 3,861 wells).



# Program Partners

- ***Working with many other agencies and organizations***
  - *TWRI*
  - *Federal and state agencies (Texas State Soil and Water Conservation Board, EPA)*
  - *Watershed Protection Plan Partnerships*
  - *Groundwater Conservation Districts*
  - *River Authorities*
  - *County Extension Agents*
  - *Texas Groundwater Protection Committee POE*

# TWON Curriculum Handbook







# *TWON Educational Training*

1-day training (~6 hours)

- Reach a broad audience
- No “master” requirements
- Stimulate initial interest and responsibility

## **PowerPoints ‘plus’**

- Well water quality screenings
- Groundwater sand-tank model
- Well components
- Down-well video clips

# Incentives

- *CEUs under development*
- *Low-cost well screening*
  - Bacteria / Pathogens
  - Nitrate-nitrogen
  - TDS / Salinity
  - Arsenic
  - Radionuclides





# TEXAS Well Owner NETWORK T W O N

- 30 completed screenings: 1888 samples
- 14 planned trainings through 2013
- 4 planned screenings for 2013
- MANY requests!

Watershed	Major Aquifer	Type	Date	FY	City	County	Contact	Samples
Elm and Sandies Creek	Gulf Coast	Scm	7-8 Jan 2013	2013	Cuero	DeWitt	Anthony Netardus, Deb Magin	
Peach Creek	Carrizo-Wilcox	Scm	9-10 Jan 2013	2013	Gonzales	Gonzales	Dwight Sexton, Debbie Magin	
Geronimo Creek	Edwards	train	31-Jan-13	2013	Seguin	Guadalupe	Ward Ling, Debbie Magin-GBRA	
Buck Creek	Blaine	train	28-Mar-13	2013	Wellington	Collingsworth	TWRI Lucas Gregory	
Upper San Marcos River	Edwards - Trinity	Scm	16-18 April 2013	2013	San Marcos	Hays	Richard Parrish	
Lampasas River	Woodbine	train	TBA in near future	2013	Lampasas	Lampasas	Lisa Prin, Heath Lusty	
Pecos River	Rustler	train	TBA in near future	2013	Fort Stockton	Pecos	Norman Fryar, TWRI Lucas Gregory	
Ogallala Aquifer	Ogallala	train	April	2013	Lubbock	Lubbock	High Plains UWCD, Robert Scott	
Upper Cibola Creek	Trinity	train	March	2013	Boerne	Kendall	City of Boerne, Ryan Bass	
Atascosa River	Edwards	train		2013	Pleasanton	Atascosa	Evergreen UWCD	
Seymour Aquifer	Seymour	train	April - May	2013	Haskell	Haskell	Paul DeLaune	
Leona River	Rustler	train		2013	Uvalde	Uvalde	TIAER Nikki Jackson	
Plum Creek	Edwards	train		2013	Lockhart	Caldwell	Nick Dornack	
Upper Llano River	Rustler	train		2013	Junction	Kimble	TTU Tom Arsuuff*/Kevin Wagner	
Cypress Creek	Trinity	train		2013	Wimberley	Hays	RSI Chris Clary	
Middle & South Concho Rivers	Rustler	train		2013	San Angelo	Tom Green	UCRA Scott McWilliams	
Ogallala Aquifer	Ogallala	train		2013	Amarillo	Potter	Panhandle GCD	
Lower San Antonio River	Gulf Coast	Scm		2013	Goliad	Goliad	Brian Yanta, Steve Lusk	
Upper West Fork Trinity	none	Scm		2014	Jacksboro	Jack	Alinda Cox	
Upper West Fork Trinity	Trinity	train		2014	Decatur	Wise	Todd Vineyard	
Colorado River	Gulf Coast	Scm		2014	Wharton	Wharton		
Monument-Seminole Draws	Ogallala	Scm		2014	Andrews	Andrews	Josh Blaneek	
Middle Sabine	Carrizo-Wilcox	Scm		2014	Longview	Gregg	Hugh H. Soape	
Cedar	Carrizo-Wilcox	Scm		2014	Athens	Henderson	Rick J. Hirsch	
Elm Fork Trinity	Trinity	Scm		2014	Gaineville	Cooke	Wayne Becker	
San Bernard River North	Gulf Coast	Scm		2014	Sealy/Columbus	Austin	Philip Shackelford	
Medina	Trinity	Scm		2014	Bandera	Bandera	Sam Wornble	
Brazos	Ogallala/Dockum	Scm		2014	Dickens	Dickens	Kevin Brendle	
Middle Brazos - Palo Pinto	Trinity, Woodbine	Scm		2014	Weatherford	Parker	Jon Green, Scott Mauney	
Lake Granbury	Trinity, Woodbine	Scm		2014	Granbury	Hood	Marty Vahlenkamp	
Nueces	Gulf Coast	Scm		2014	George West	Live Oak	Dale Rankin	
Middle Colorado	Trinity	Scm	4-5 Apr 2011	2011	Goldthwaite	Mills	Fox Crossing Water	93
Nueces Headwaters	Edwards-Trinity	Scm	13 Apr 2011	2011	Leakey	Real	Real-Edwards C and R	42
West Nueces	Edwards-Trinity	Scm	14 Apr 2011	2011	Rock Springs	Edwards	Real-Edwards C and R	41
San Marcos	Trinity	Scm	18-19 Apr 2011	2011	Johnson City	Blanco	Cow Creek GCD	58
Pedernales	Trinity	Scm	19 Apr 2011	2011	Blanco	Blanco-Pedernales		28
San Fernando	Gulf Coast	Scm	2-3 May 2011	2011	Alice	Jim Wells	Starr Co. GCD	40
Los Olmos	Gulf Coast	Scm	4-5 May 2011	2011	Rio Grande City	Starr	Brush Co. GCD	73
Lower Colorado - Cummins	Gulf Coast	Scm	18 May 2011	2011	Columbus	Colorado	Colorado Co. GCD	35
Upper West Fork Trinity	Trinity	Scm	31 May 2011	2011	Jacksboro	Jack	no GCD	91
Salt Fork Brazos	Seymour, Blaine	Scm	1-2 June 2011	2011	Aspermont	Stonewall	no GCD	5
Lower Guadalupe	Gulf Coast	Scm	27 July 2011	2011	Victoria	Victoria	Victoria Co. GCD	141
Upper Nueces	Carrizo-Wilcox	Scm	4-5 Oct. 2011	2012	Carrizo Springs	Dimmit	Richard Griffin	32
Middle Nueces	Carrizo-Wilcox	Scm	6-7 Oct. 2011	2012	Laredo	Webb	George Gonzales	37
Middle Brazos - Palo Pinto	Seymour	Scm	11 Oct 2011	2012	Graham	Young	Brad Morrison, Leslie Neve	13
Middle Brazos - Palo Pinto	Trinity, Woodbine	Scm	12-13 Oct. 2011	2012	Weatherford	Parker	Jon Green, Scott Mauney	72
Lake Granbury	Trinity, Woodbine	Scm	24 Oct 2011	2012	Granbury	Hood	Marty Vahlenkamp	75
San Bernard River North	Gulf Coast	Scm	9-10 Jan. 2012	2012	Sealy/Columbus	Austin	Philip Shackelford	104
San Bernard River South	Gulf Coast	Scm	8-10 March 2012	2012	Angleton	Brazoria	Corrie Bowen/Aubin Phillips	80
Paint	Seymour	Scm	21-22 March 2012	2012	Anson	Jones	Steven Estes/Paul DeLaune	33
Onion and Barton Creeks	Edwards - Trinity	Scm	16-17 April 2012	2012	Dripping Springs	Hays	Richard Parrish	111
North Concho River	Edwards	Scm	14-15 May 2012	2012	Sterling City	Sterling	Chad Coburn	5
Concho River	Edwards-Trinity	Scm	16-17 May 2012	2012	Eden	Concho	Michael Palmer	33
Brady Creek	Edwards-Trinity	Scm	6-7 June 2012	2012	Brady	McCulloch	Vance Christie, Chuck Brown	77
Upper Guadalupe River	Edwards-Trinity	Scm	9-10 July 2012	2012	Kernville	Kerr	Roy Walton, Tara Bushnoe	50
Leon River	Trinity	Scm	12-13 Sept. 2012	2012	Hamilton	Hamilton	Shirley Gerald, Billy Hopson	126
Colorado River	Carrizo-Wilcox	Scm	4-Oct-12	2012	Bastrop	Bastrop	Rachel Bauer, Steve Box	170
Attoyac Bayou	Carrizo-Wilcox	Scm	17-18 Oct. 2012	2012	Nacogdoches	Nacogdoches	Anthony Castilaw, James Sugg	18
San Fernando	Gulf Coast	Scm	31-Oct - 1-Nov 2012	2012	George West	Live Oak	Dale Rankin	40
Lower Frio	Carrizo-Wilcox	Scm	2-Nov. 2012	2012	Pearsall	Frio	Jaime Lopez	51
Monument-Seminole Draws	Ogallala	Scm	13-Nov. 2012	2012	Andrews	Andrews	Josh Blaneek	114
Total:								1888

Confirmed TWON Event, Date Scheduled

Tentatively scheduled workshops and screenings

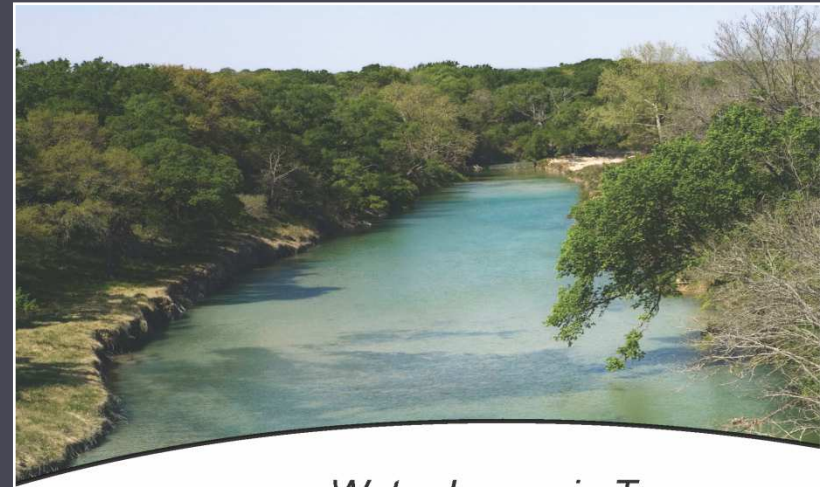
Obligated Watershed, not yet scheduled

Suggested Watershed

Completed TWON Event

# *Water Issues in Texas*

- *A Survey of Public Perceptions and Attitudes about Water*
  - 59-item survey sent to 1,275 Texans
    - City: 73%
    - Outside City, but not Farming: 23%
    - Farm/Ranch: 4%



## *Water Issues in Texas:*

*A Survey of Public Perceptions  
and Attitudes about Water*

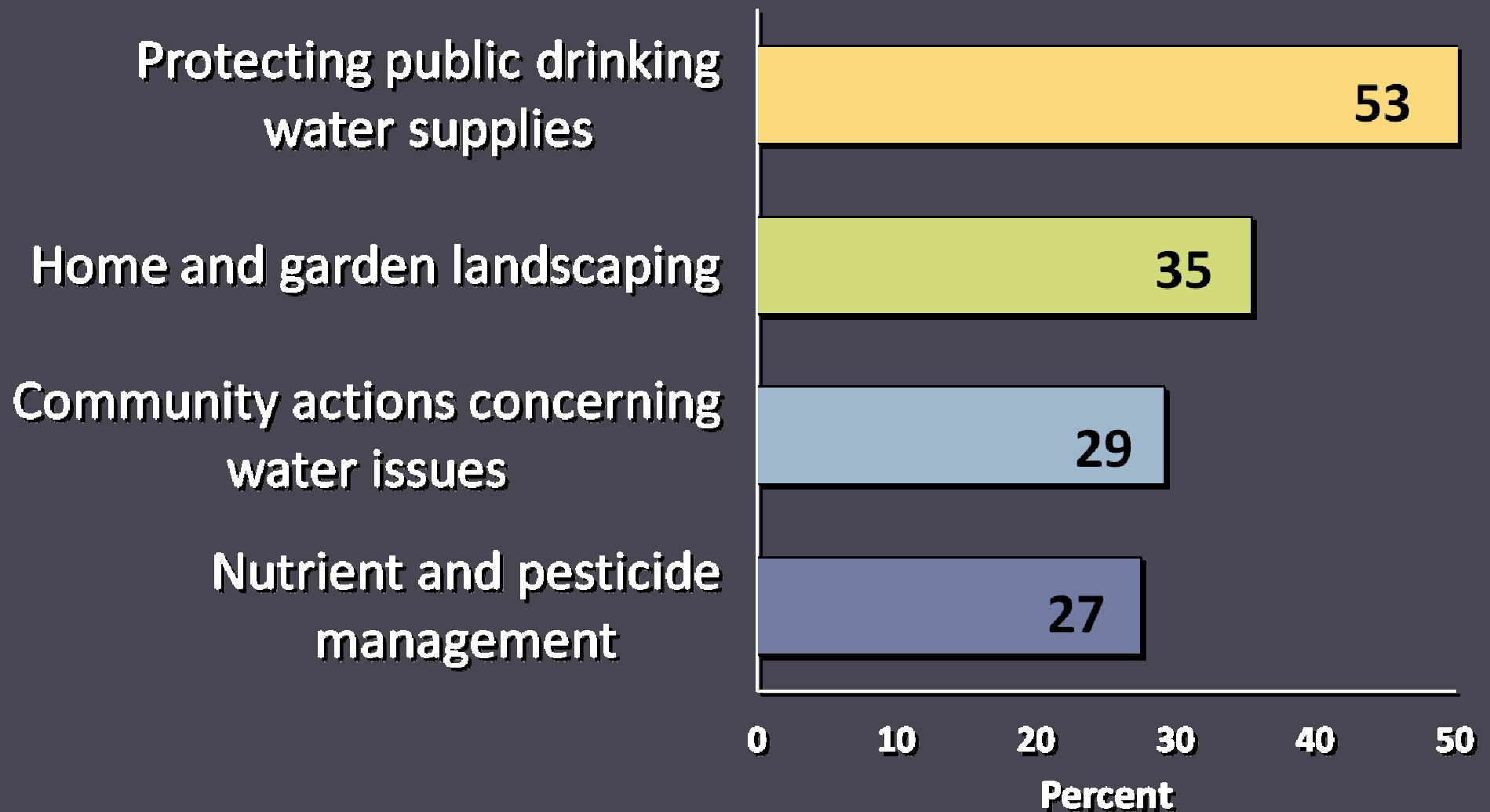


A network that responds to water resource issues by advancing knowledge through research, education and extension projects.





## ***What Would You Like to Learn More About...?***



# *Outside City Limits Topics Preferences*

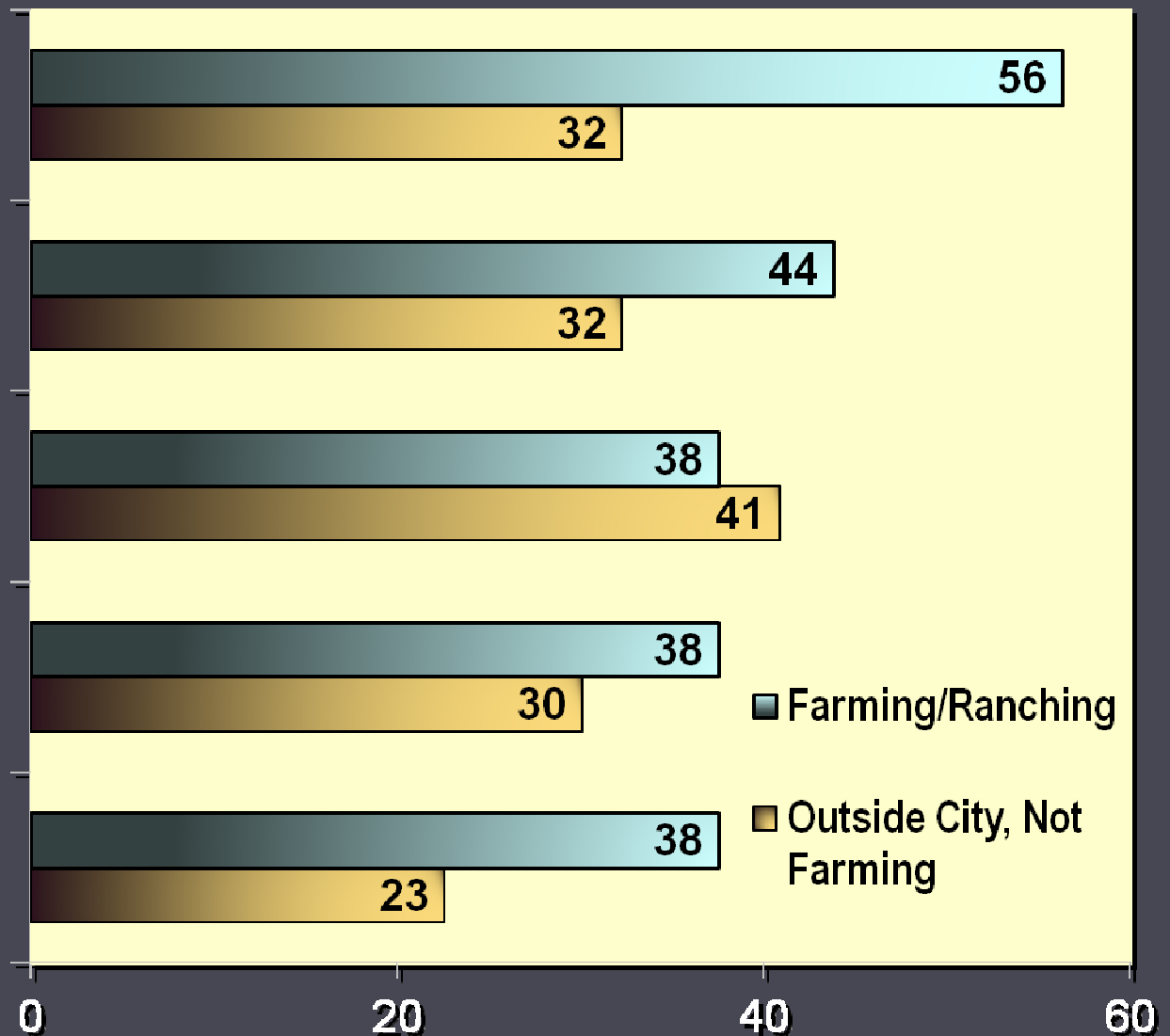
**Private well protection**

**Septic systems**

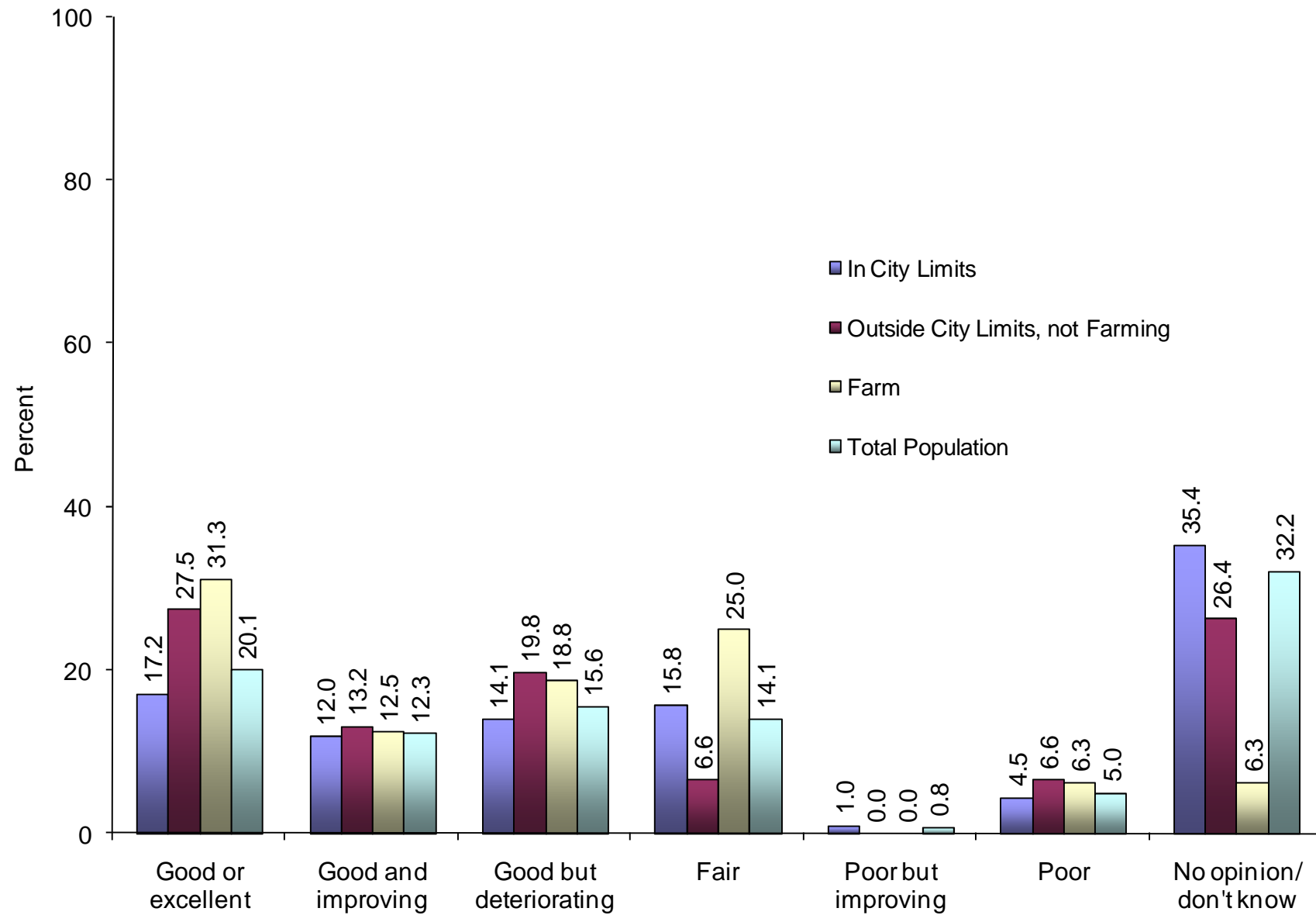
**Public drinking water**

**Fish and wildlife water**

**Watershed  
management**







What is the Quality of Groundwater Where You Live?







Animals





# Roots

020. 2f



Leaks





More leaks

013.1f





# ***TWON Program Goals***

## **Desired Outcomes**

1. Changes in knowledge, awareness, attitudes and actions of private well managers
2. Improvement of private well management to safeguard homeowner health and protect aquifer integrity.



# *Approach and Methods*



Lessons learned from very successful, established programs

- Pennsylvania MWON
- Mid-Atlantic MWON including the Virginia MWON
- Montana Well Educated

Modify existing state publications: TEX\*A\*Syst

## ***Approach and Methods***

TWON Coordinator: Drew Gholson

Texas Well Owner Handbook

TWON PowerPoint presentations

Adapt existing fact sheets

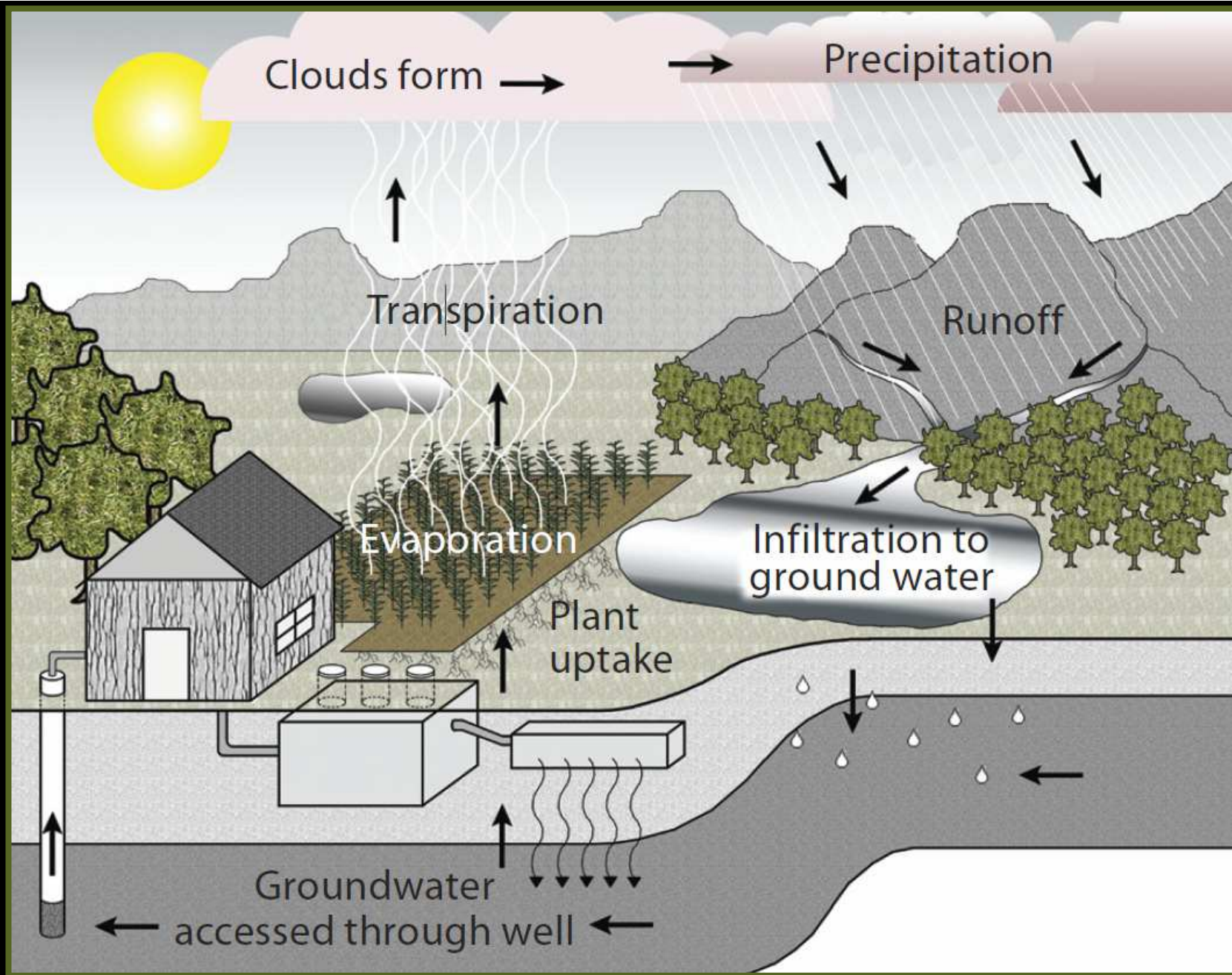
Needs analysis and develop additional materials



## *Training Topics and Activities*

- Well water screening for fecal coliform, nitrates and TDS
- Proper maintenance of the wellhead
  - Land use and groundwater hydrology
  - **On-site wastewater treatment systems**
  - Household waste management
- Naturally-occurring constituents of possible health concern
- Treatment options to address water quality problems
- Aging of wells
- Locating and properly plugging abandoned wells

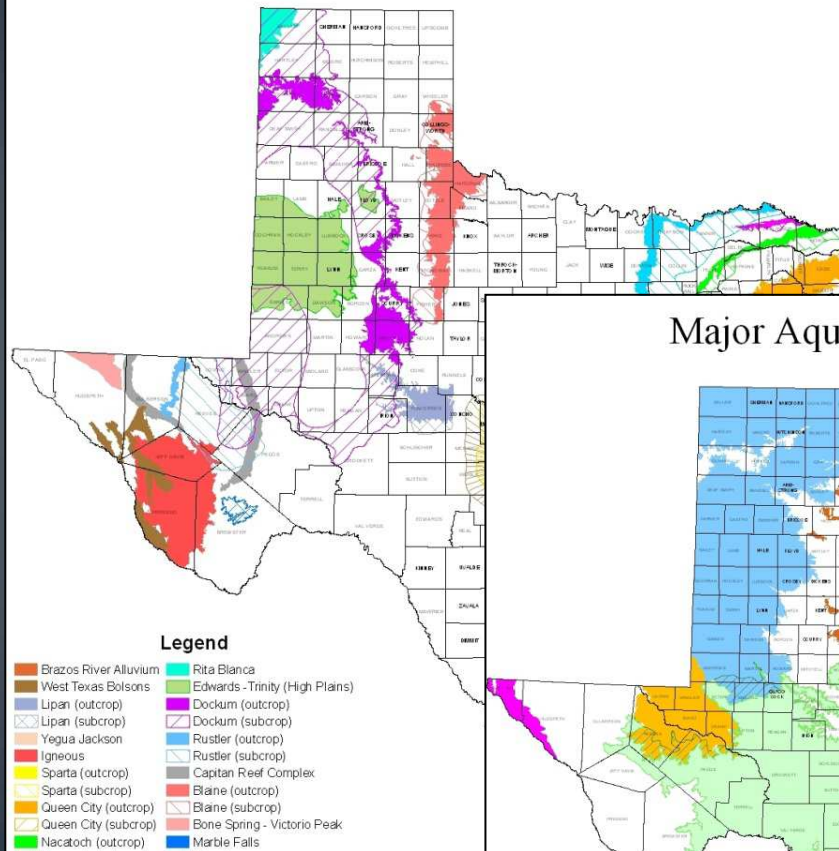




**Hydrologic cycle**

# Aquifers in Texas: Aquifer Basics

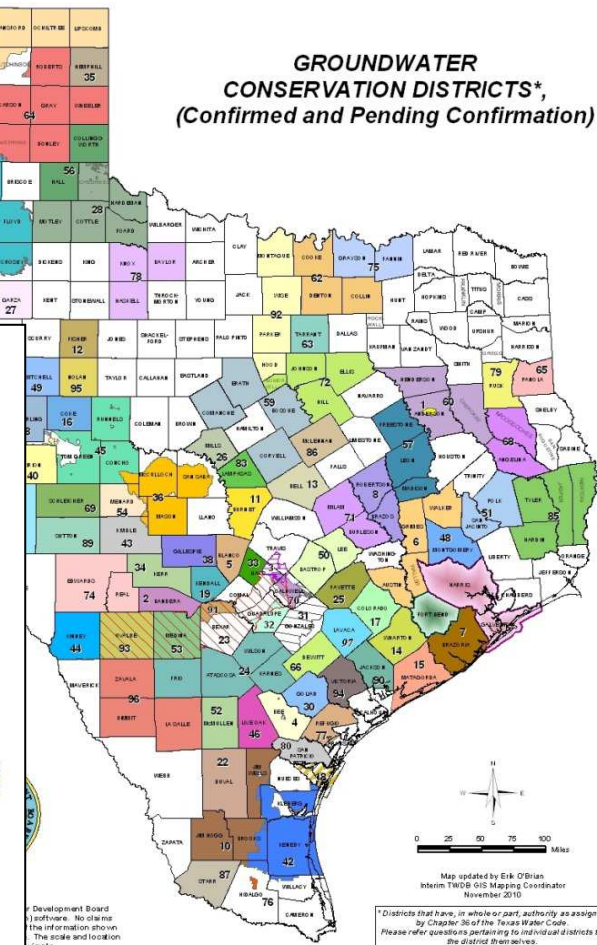
## Minor Aquifers of Texas



## Major Aquifers of Texas



## GROUNDWATER CONSERVATION DISTRICTS\*, (Confirmed and Pending Confirmation)





fractures

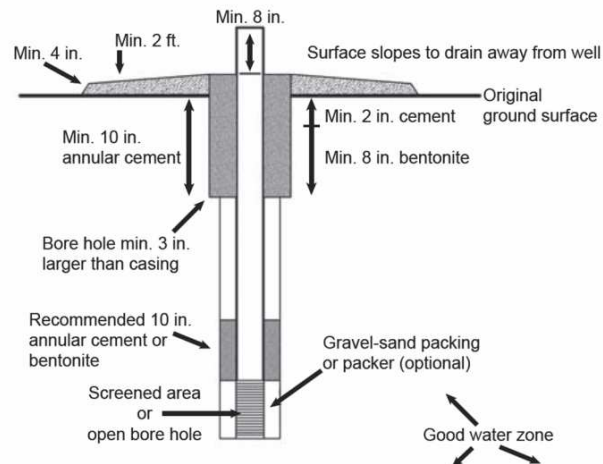




# Well Head Protection:

surface seal / apron  
to reduce  
surface contamination  
entering the aquifer

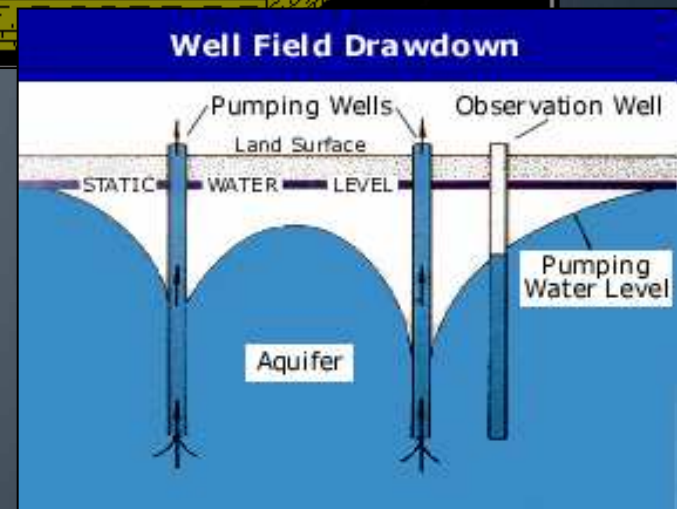
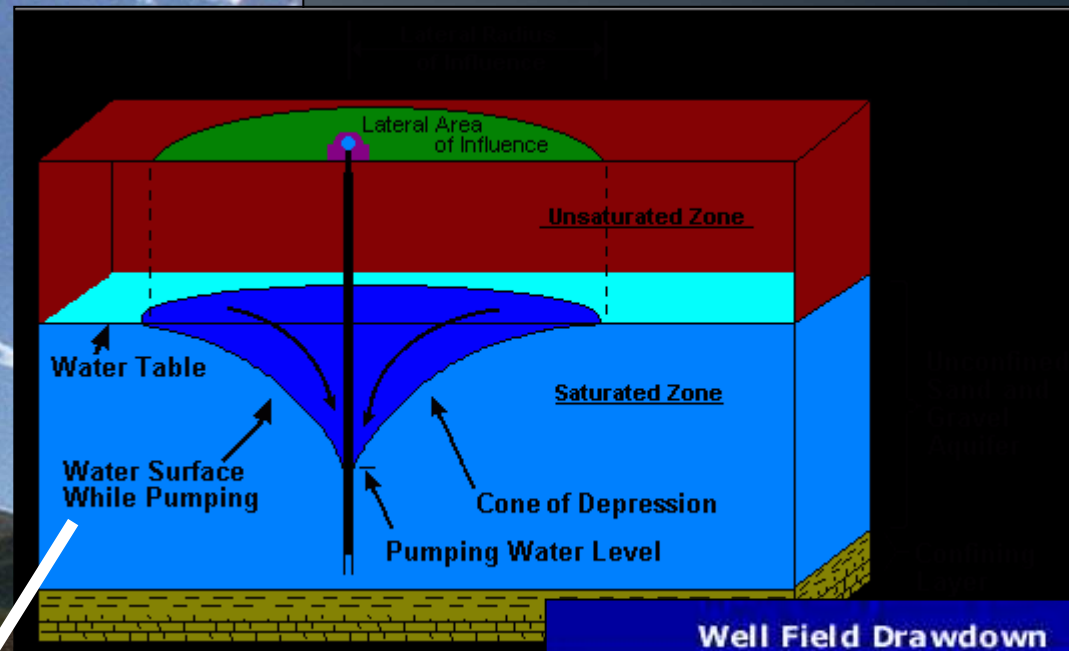
**Proper Surface and Annular Sealing Example**  
Chapter 76.1000 (1)



**Figure 3. An example of the proper surface and annular sealing of a well.**

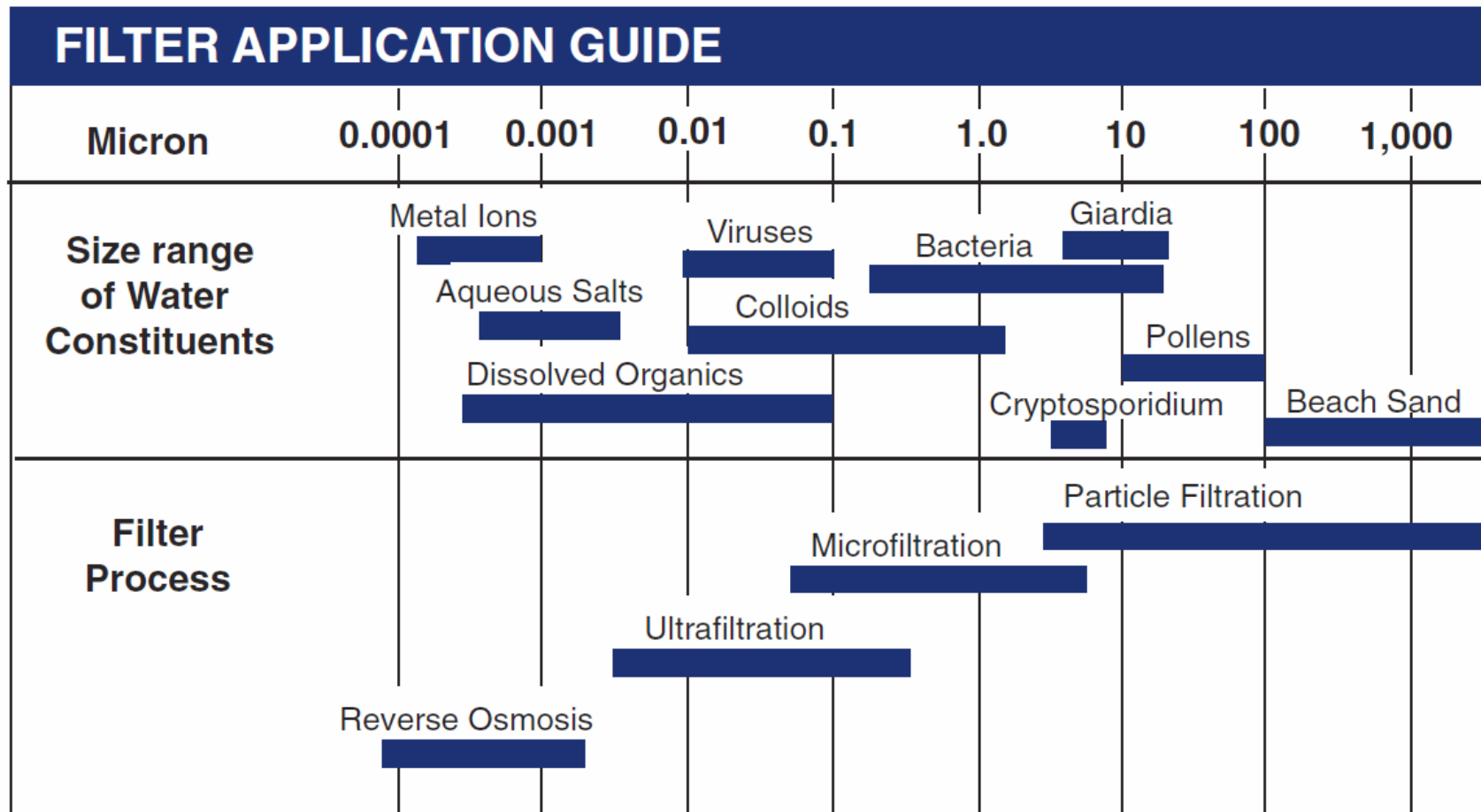


# Drawdown



Cone of depression

# Point of Use Treatment Options







# Texas Department of Licensing and Regulation

*The umbrella licensing agency of the State of Texas*

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Water Well Drillers, Pump Installers

(Numeric only)

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All

Inquire by Name (Last, First)

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Choose One (Optional) Type the first letter to scroll down.

Inquire by County

Choose One (Optional) Type the first letter to scroll down.

Inquire by Zip Code

equals to

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<http://www.license.state.tx.us/LicenseSearch>

# *Abandoned Wells*

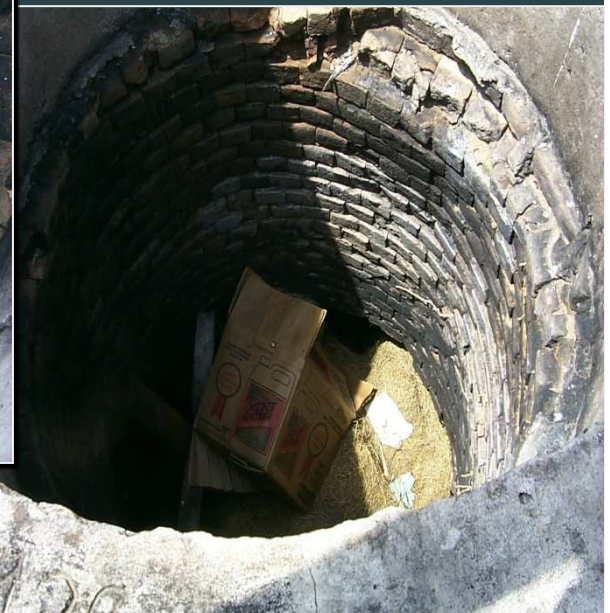
- Have you seen an abandoned well?
  - Was it covered?
  - Would it have been easy to fall in to?





# ***What materials should be used to plug wells?***

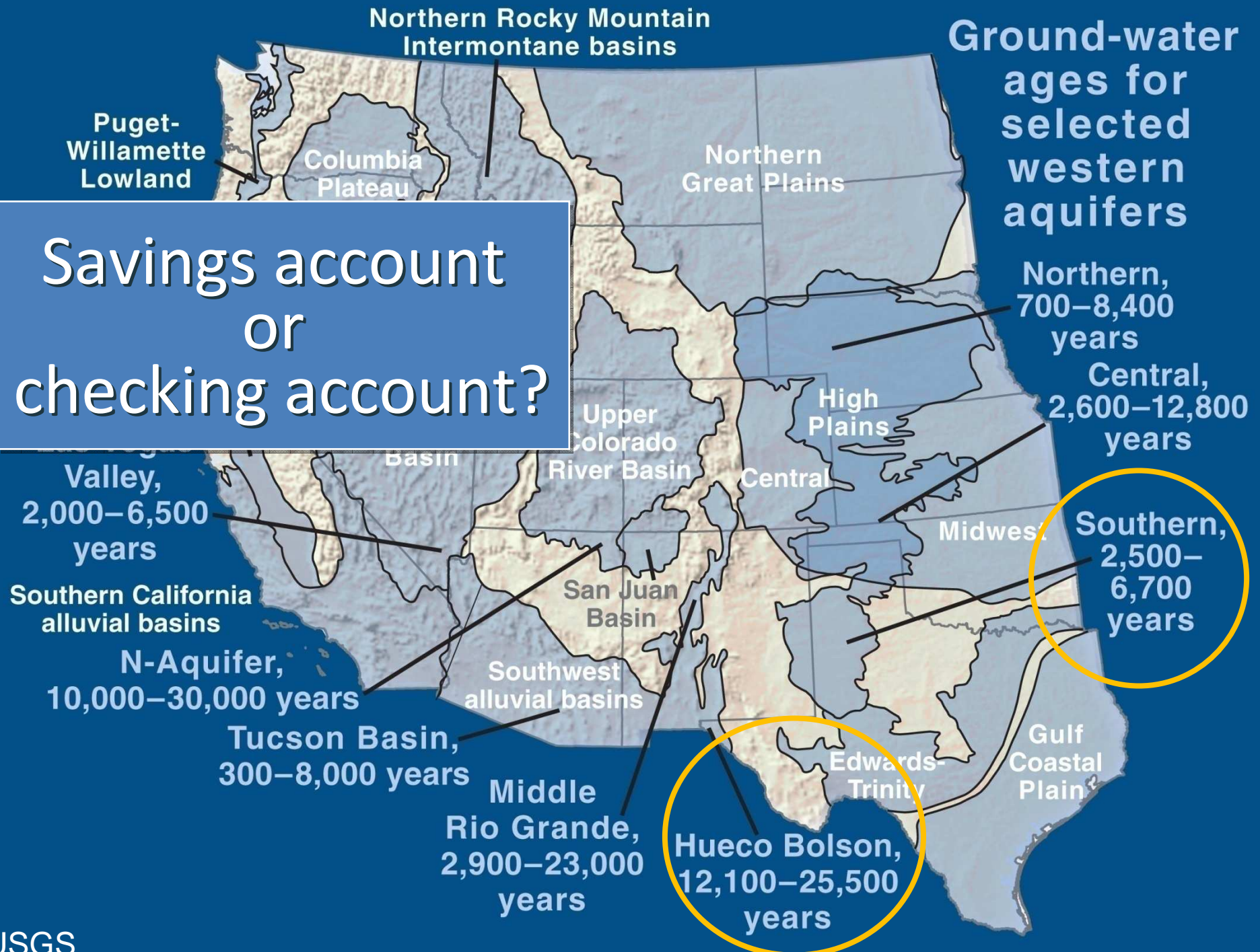
There are many wrong ideas about what should be used to plug a well.





## Ground-water ages for selected western aquifers

Savings account  
or  
checking account?







# Questions?

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